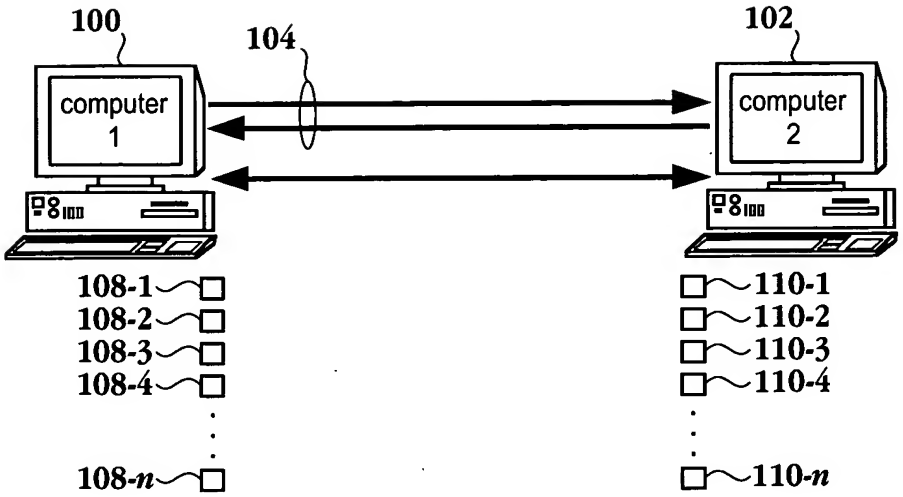

Fig. 1 *(prior art)*

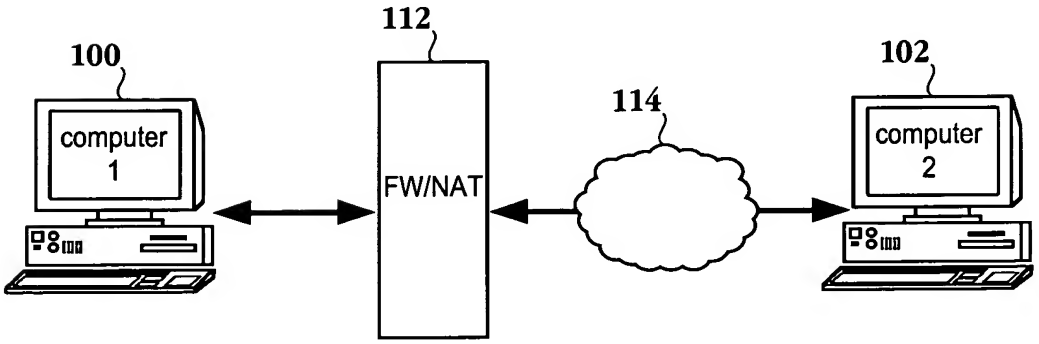

Fig. 2 *(prior art)*

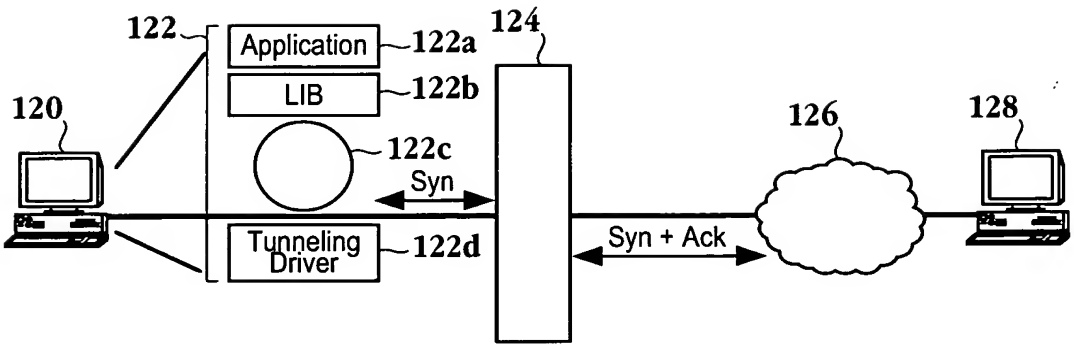
122
Application
122a
124
LIB
122b
120
126
128
122c
Syn
Tunneling Driver
122d
Syn + Ack

Fig. 3

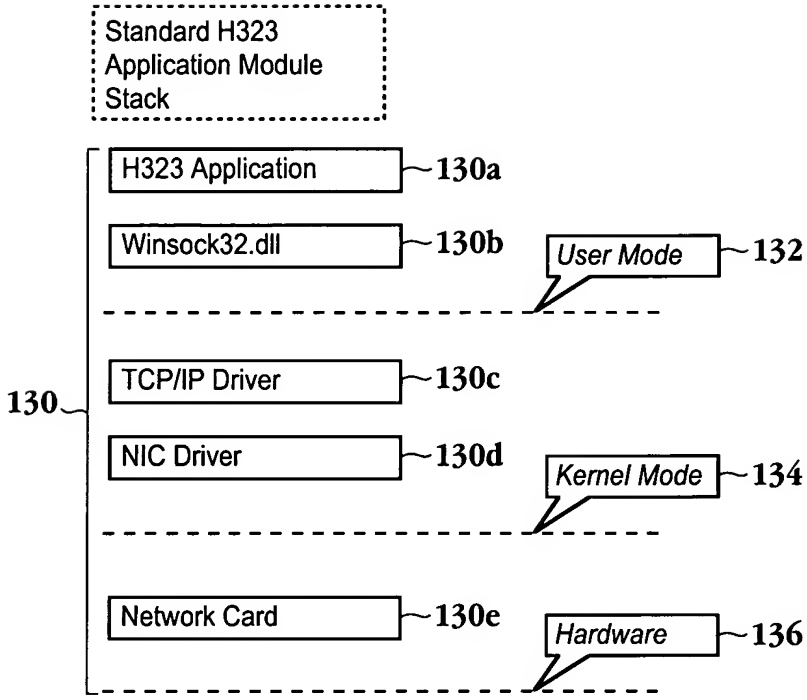
Standard H323
Application Module
Stack
H323 Application
130a
Winsock32.dll
130b
User Mode
132
130
TCP/IP Driver
130c
NIC Driver
130d
Kernel Mode
134
Network Card
130e
Hardware
136

Fig. 4A

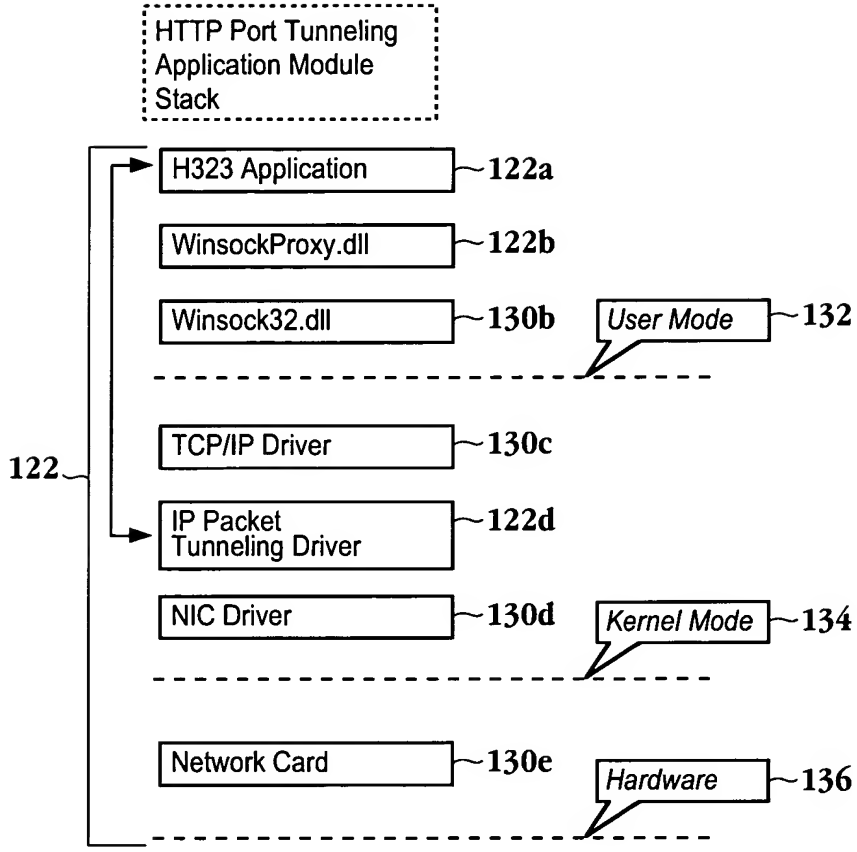
HTTP Port Tunneling Application Module Stack
H323 Application
122a
WinsockProxy.dll
122b
Winsock32.dll
130b
User Mode
132
TCP/IP Driver
130c
122
IP Packet Tunneling Driver
122d
NIC Driver
130d
Kernel Mode
134
Network Card
130e
Hardware
136

Fig. 4B

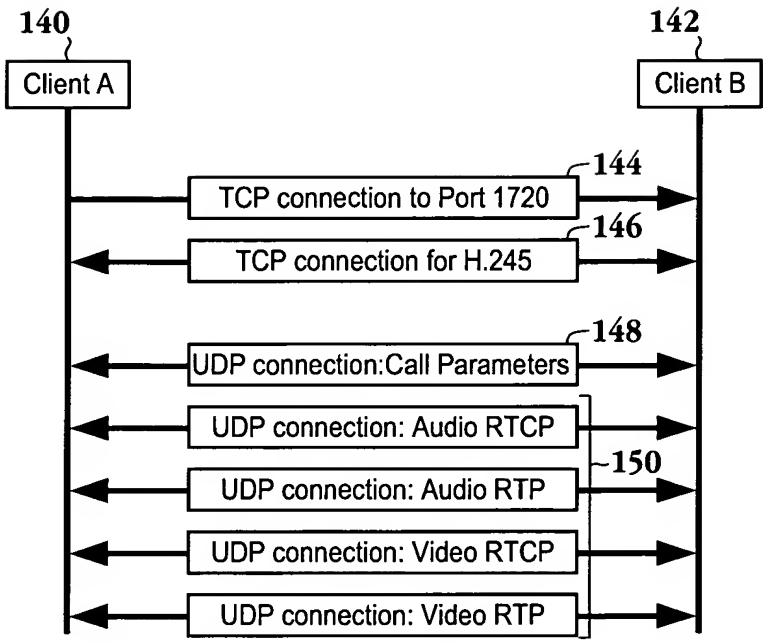
140
Client A
142
Client B
144
TCP connection to Port 1720
146
TCP connection for H.245
148
UDP connection:Call Parameters
UDP connection: Audio RTCP
150
UDP connection: Audio RTP
UDP connection: Video RTCP
UDP connection: Video RTP

Fig. 5

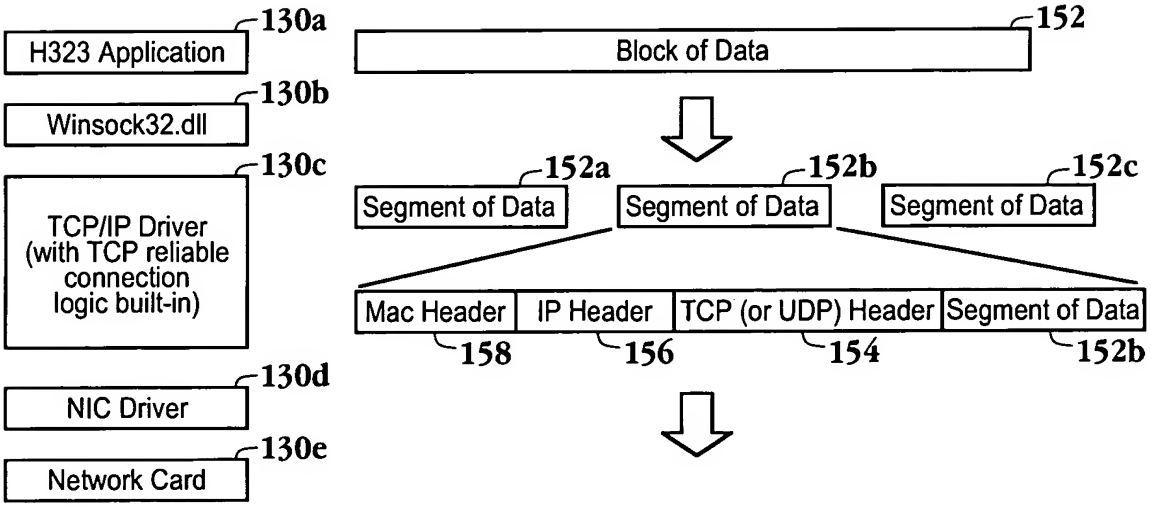
H323 Application
130a
Winsock32.dll
130b
TCP/IP Driver (with TCP reliable connection logic built-in)
130c
NIC Driver
130d
Network Card
130e
Block of Data
152
Segment of Data
152a
Segment of Data
152b
Segment of Data
152c
Mac Header
IP Header
TCP (or UDP) Header
Segment of Data
158
156
154
152b

Fig. 6A

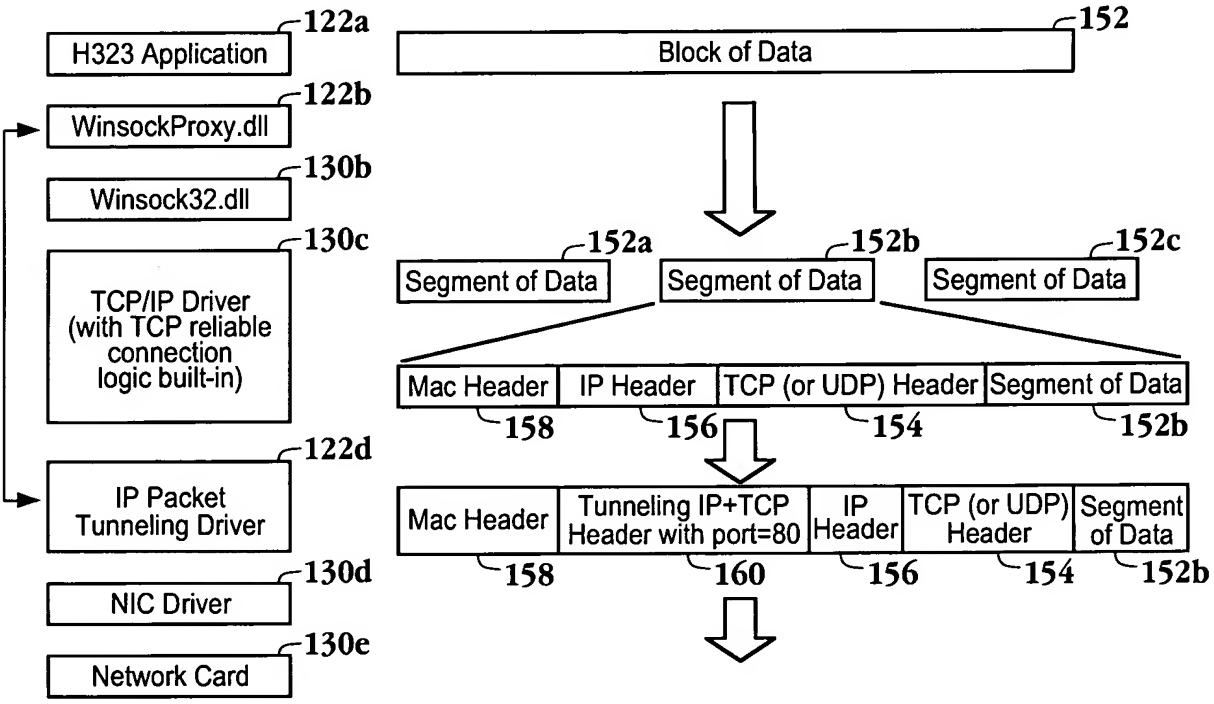
H323 Application
122a
WinsockProxy.dll
122b
Winsock32.dll
130b
TCP/IP Driver (with TCP reliable connection logic built-in)
130c
IP Packet Tunneling Driver
122d
NIC Driver
130d
Network Card
130e
Block of Data
152
Segment of Data
152a
Segment of Data
152b
Segment of Data
152c
Mac Header
IP Header
TCP (or UDP) Header
Segment of Data
158
156
154
152b
Mac Header
Tunneling IP+TCP Header with port=80
IP Header
TCP (or UDP) Header
Segment of Data
158
160
156
154
152b

Fig. 6B

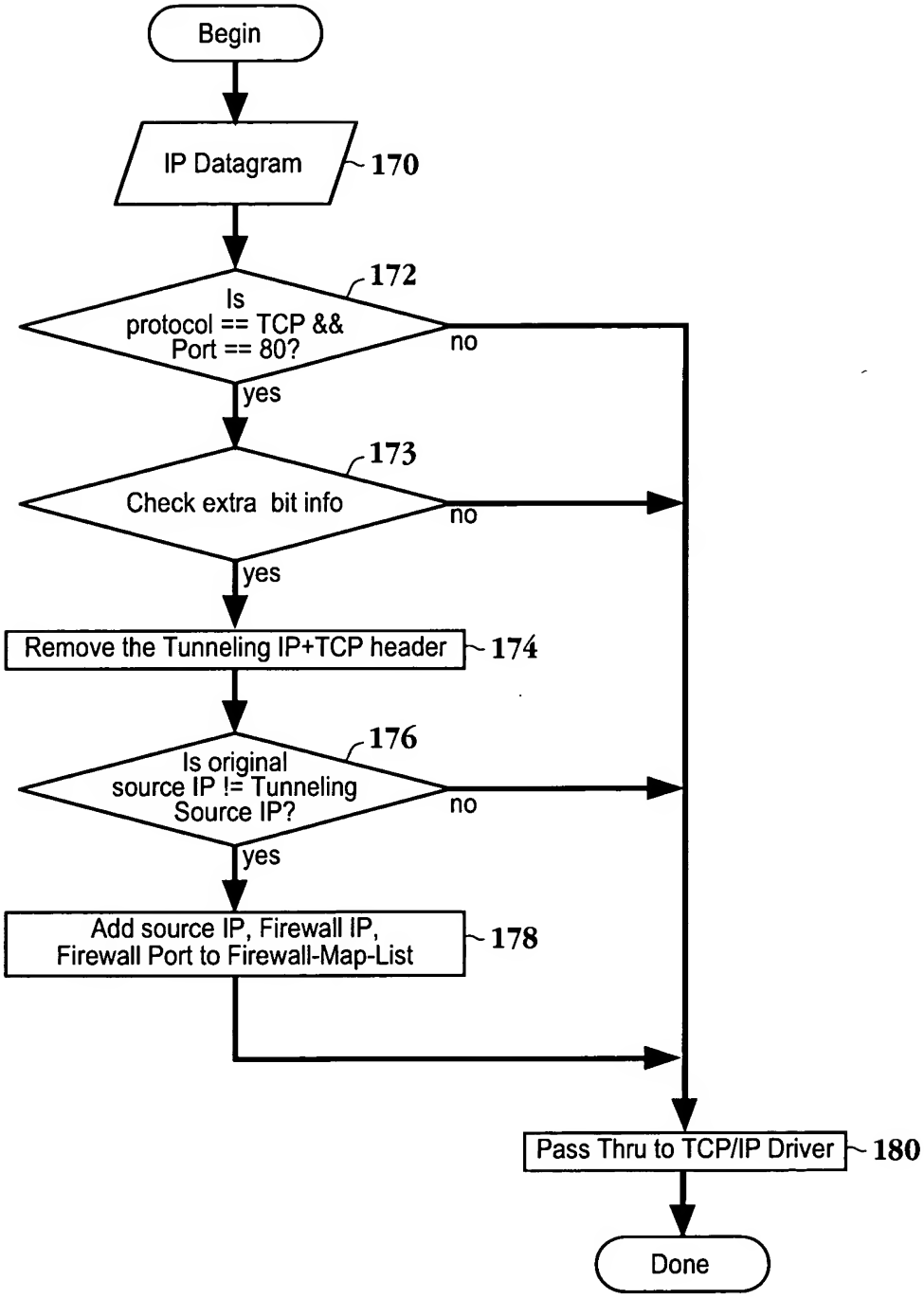
Begin
IP Datagram
170
172
Is
protocol == TCP &&
Port == 80?
no
yes
173
Check extra bit info
no
yes
Remove the Tunneling IP+TCP header
174
176
Is original
source IP != Tunneling
Source IP?
no
yes
Add source IP, Firewall IP,
Firewall Port to Firewall-Map-List
178
Pass Thru to TCP/IP Driver
180
Done

Fig. 7

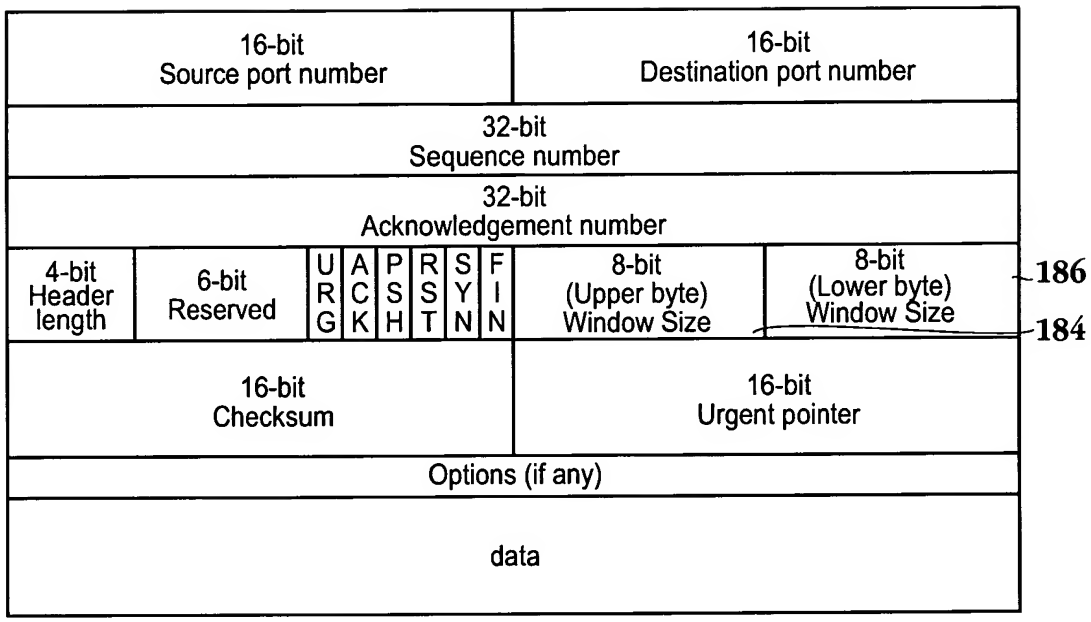
182
16-bit
Source port number
16-bit
Destination port number
32-bit
Sequence number
32-bit
Acknowledgement number
4-bit
Header
length
6-bit
Reserved
U
R
G
A
C
K
P
S
H
R
S
T
S
Y
N
F
I
N
8-bit
(Upper byte)
Window Size
8-bit
(Lower byte)
Window Size
186
184
16-bit
Checksum
16-bit
Urgent pointer
Options (if any)
data

Fig. 8

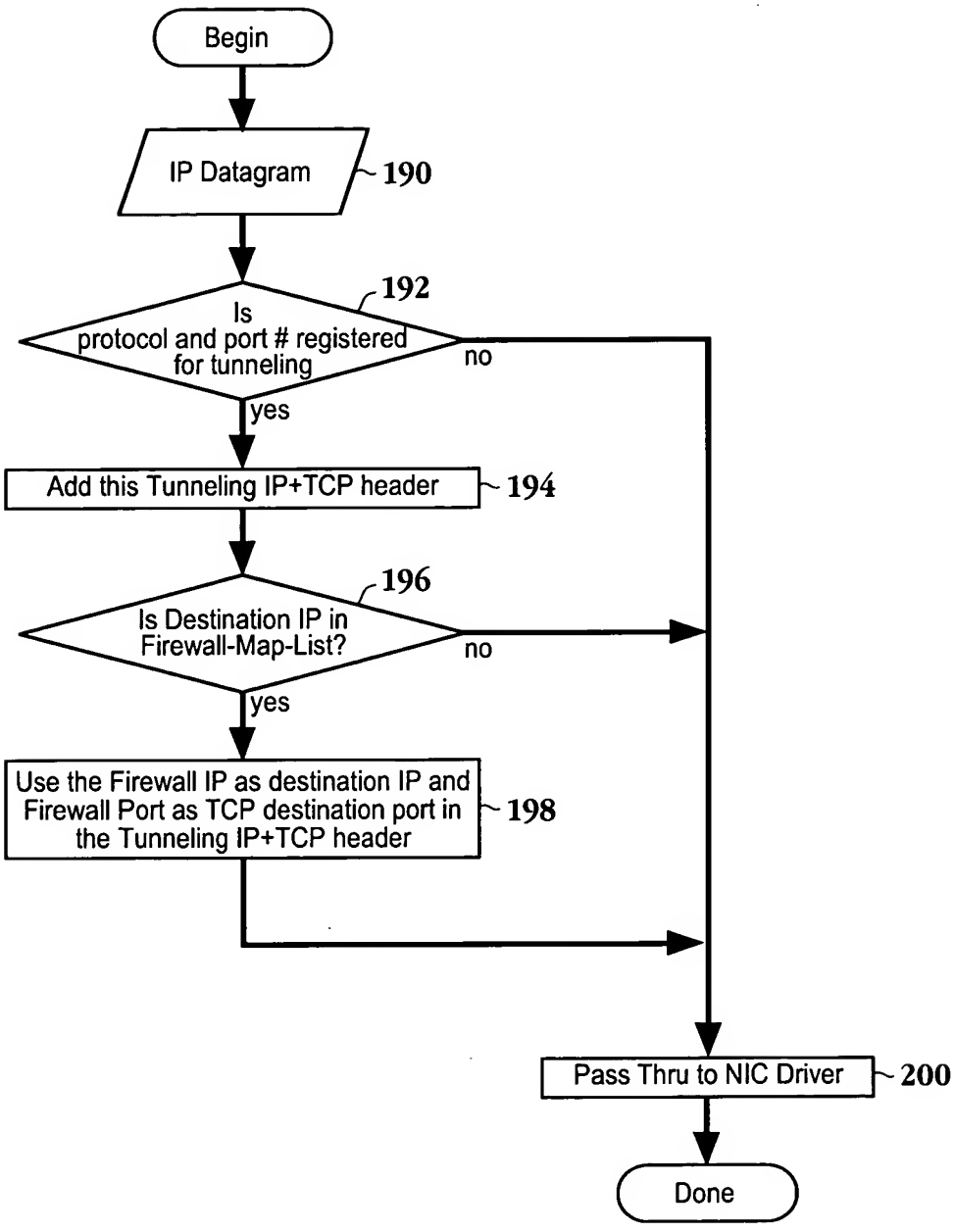
Begin
IP Datagram
190
192
Is protocol and port # registered for tunneling
no
yes
Add this Tunneling IP+TCP header
194
196
Is Destination IP in Firewall-Map-List?
no
yes
Use the Firewall IP as destination IP and Firewall Port as TCP destination port in the Tunneling IP+TCP header
198
Pass Thru to NIC Driver
200
Done

Fig. 9